

REMARKS

Summary of Changes Made

The Application was filed with 14 claims, and claims numbering up to 41 were later added. Presently, new claims 42-55 are added while all claims up through 41 are canceled. Accordingly, claims 42-55 (14 claims) are pending in the application. It is believed that the claim numbering herein is proper, and accounts for all claims that have ever been pending. No new matter has been added.

Claim Rejections – 35 U.S.C. 103(a) - (Zecchino/Kojima)

Claims 1, 4-6, 10 and 15-20 and 23 are rejected as obvious in view of U.S. Pat. No. 6497887 to Zecchino et al., (“Zecchino”) in view of U.S. Pat. App. Pub. No 2002/0068683 to Kojima, (“Kojima”). While the rejected claims are canceled, the subject matter of such claims is substantially maintained in new claims 42-55.

Applicants disagree with Examiner’s opinion that the volumetric limitations according to step (a) of new claim 42 and the geometrical sphere shape according to claim 32 are obvious from Zecchino in view of Kojima.

Zecchino explicitly refers to membranes (abstract; column 4 line 53 et. seq.) or to dry films or blocks which are sliced or cut into application pieces with a thickness of 0.1 to 1.5 mm thickness (column 3 lines 47 to 52).

Accordingly, Zecchino neither refers to sphere-shaped articles nor to a shaped article with a diameter of 3 to 60 mm. Furthermore Zecchino does not refer to shaped articles containing skeleton-forming agents, proteins being excepted.

The present invention provides a method for using improved shaped articles, which are intended for external use, especially for application onto the skin or hair. According to the present specification, the improvement in the shaped articles can be seen in:

- a) the regular sphere-form, providing pleasant appearance, improved packaging and transporting capacity, standardized and uniform active ingredient amounts as well as uniform and homogeneous dissolution kinetics (specification, page 4, lines 5-18);

- b) large-format of 3 – 60 mm in diameter, allowing single-use application per article, (specification, page 4, lines 5-18);
- c) improved dissolution, which includes uniform and standardized dissolution behaviour as well as a high dissolution rate of less than 1 minutes (specification page 17, lines 23-32).

Zecchino:

Applicants point out the following relative to Zecchino.

- a) Zecchino refers to shaped articles in the form of films or blocks which are sliced into the application form of membranes. Accordingly, Zecchino refers to sheet-like application forms only.
- b) The membranes according to Zecchino, which are intended for external application, exhibit a thickness of 0.1 – 1.5 mm, which are then applied onto the skin per sheet-like membrane in a single-use application in dry or pre-moistened state. Complete dissolution of the sheet-like membrane is carried out onto the skin by rubbing the dissolved material into the skin (col. 4, line 62 to col. 5, line 7). This clearly indicates, that the membranes according to Zecchino do not exhibit ready and fast dissolution kinetics and thus do not form a solution or a gel upon contacting the shaped article with an aqueous solution according to claim 1 step (b) followed by application to the skin of the solution according to step (c) of the present invention.
- c) The membranes according to Zecchino mandatorily comprise partially cross-linked polymers as pointed out earlier. A person skilled in the art is well aware, that partial cross-linking mandatorily limits the dissolution rate. As a result, according to Zecchino only thin films of approximately 0.1 to a maximum of 1.5 mm thickness are suitable for dissolution and application for external application. As pointed out above, the sheet-like membranes according to Zecchino are explicitly intended to be applied to the skin in the form of stable sheet-like membranes (that are still intact) before being completely dissolved and rubbed into the skin. Accordingly, due to their two-dimensional sheet-like appearance, such films are limited in the external application to extended, preferably plain skin areas. Instead, a regularly shaped article in the form of a sphere can be dissolved and applied more comfortable with more variety with

respect to the region of application on the e.g. human body. Furthermore, a shaped article in the form of a sphere is more pleasant in its appearance and packaging and transporting is easier.

The stabilization of Zecchino is achieved by partial cross-linking (e.g. Ca cross-links). With respect to the specific example 2 (which is obviously free of calcium) such stabilization is obviously achieved by the relatively high amount of stabilizing fibers (rayon: 9%). Rayon is well known in the art and is a semi-synthetic cellulose fibre which is insoluble in aqueous solutions (e.g. the used cosmetic hydration solutions). As a result the membranes according to example 2 will not totally dissolve within less than 1 minute as at least the insoluble rayon fibers will remain. As a supplement to the present Amendment, or as a portion of the response to the next Office Action, Applicants will provide experimental data together with comparative test results. The comparative dissolution tests will show that the differences in the dissolution behavior between the membranes of Zecchino's example 2 and the shaped articles according to the present invention establish the patentability of the presently claimed invention. Applicants will also prepare large-format articles of the composition of Zecchino's example 2 according to the presently claimed geometry limitations and examine the dissolution behavior.

Further, the presently claimed invention is distinguished over the combined Zecchino and Kojima references based on the following: A sphere exhibits much more ambitious dissolution kinetics than a thin flat film, as the distance to the inner core is much greater in a sphere with a diameter of 3 – 60 mm than in a film of only 1.5 mm. This plays an important role for uniform, homogeneous and fast dissolution of the shaped articles for external application. Zecchino only refers to dissolvable / dissolved articles with a maximum thickness of 1.5 mm (resulting in a maximum distance to the inner core of 0.75 mm). In contrast, the improved sphere-shaped articles of the present invention exhibit a minimum diameter of 3 mm (resulting in a minimum distance to the inner core of 1.5 mm).

Additionally, the membranes according to Zecchino remain stable and sufficiently undissolved, even upon contact with liquids, to be applied in the form of pre-moistened membranes although they exhibit maximally half the distance to the inner core compared to the articles according to the present invention. This shows that the membranes according to Zecchino not only differ in their volumetric and geometric appearance but even more in their

dissolution behavior, which results from their differing chemical compositions.

The claimed method differs from Zecchino not only in the volumetric and geometric dimensions but also in the specific dissolution behavior and the mode of application of the readily and homogeneously dissolved article, which is then applied in the form of a solution or gel instead of a pre-moistened still form-stable article. Such difference is realized by using the improved articles according to the present invention, which exhibit the specific combination of uniform and fast solubility with large-format (comprising a minimum distance to the inner core of the article of 1.5 mm or more).

In new claim 55, the improvement in the shaped articles is supported by the specific selection of a low-viscosity skeleton-forming agent with a viscosity of less than 2000 mPa • s of a 1 per-cent-by-weight solution or suspension thereof in water at 20°C and at pH 6-8 (see specification page 7 lines 5 to 27 and page 17, lines 23 to 32).

Furthermore, the sphere shaped articles according to the present invention preferably comprises at least 10 wt.% of such selected skeleton-forming agent (see specification page 14 line 27 to page 15 line 2) which supports the mechanical strength and cohesion of such large-format sphere-shaped articles. The improved dissolution behavior is further supported by the specific density of the sphere-shaped articles of the present invention (see specification page 19 line 32 to page 20 line 5) and corresponds to the quantity of skeleton-forming agent (see specification page 19 lines 10 to 21).

Kojima:

With respect to Kojima, Applicants point out that such reference is cited only for the broad proposition that “the formation of wettable objects [of] any shape is well known in the art as evidenced by the previous teachings (e.g. Figure 6F) of Kojima,” (Office Action 29 June 2010, page 8). The Examiner expands this brief and broad teaching to apparently cover any and all conceivable size, shape and volumetric limitations. Applicants respectfully submit that this is an improperly overbroad application of Kojima. This application of Kojima would require undue experimentation to arrive at the precisely claimed recitations of the present application. Kojima provides no meaningful guidance as to size and shape except to try them all. On this basis alone, the combination of the teachings of Kojima with those of Zecchino is improper.

Further, Kojima only refers to solid shaped articles, e.g. sphere shaped articles, in the form of solid blocks which explicitly do not rehydrate throughout the whole material upon contact with water, as explained in detail in Amendment H, filed 20 January 2010. Accordingly Kojima, also fails to disclose easily-soluble large-format articles. The Kojima reference does not refer to high dissolution at all, or to any dissolution. On this basis alone, the combination of the teachings of Kojima with those of Zecchino is improper.

As even the thin membranes of Zecchino alone are clearly not intended for fast and ready dissolution, (due to the intended application scheme in dry or stable pre-moistened form), an article varied in terms of volumetric and geometric dimensions in view of Kojima would not be suitable for the claimed use. Accordingly, without undue experimentation, variation of the dimensions of Zecchino's article would not result in the articles and claimed use according to the present invention.

Zecchino teaches a stabilized (partially cross-linked) article. It is apparent from the teachings of Zecchino that stabilization is necessary in order that the articles withstand the freeze-drying process.

Applicants further maintain their disagreement with the examiners opinion that example 2 of Zecchino discloses a freeze-dried membrane which is free of ingredients which are consistent with the definition of "protein-based skeleton forming agents". In this context, Applicants clarify the following:

The present invention excludes protein-based skeleton-forming agents, wherein skeleton-forming agents refer to hydrocolloids – that is to say (partially) water soluble natural or synthetic polymers (see specification page 6, paragraph 3).

Applicants point out - for reasons of clarification - that protein-based active substances such as e.g. enzymes or hormones, which are well known to be neither polymers nor hydrocolloids, may be present in the articles of the invention (page 8, paragraph 2). It then becomes apparent to the skilled artisan that protein-based active substances of the invention will not comprise skeleton-forming protein-based compounds - that is to say polymeric protein-based substances such as e.g. collagen.

According to Zecchino (col. 3, lines 15-33), the 1 % soluble collagen used in Example 2

may function as a film-forming agent. It is apparent for a skilled person, that film-forming properties are related to skeleton-forming properties. Besides, as long as a proteinaceous compound (soluble collagen) exhibits skeleton-forming activity, which has been shown by the cited prior art, such compound is in any case excluded from the present invention, regardless of the concrete use intended by Zecchino. Accordingly, as the soluble collagen of example 2 falls under the definition of substances explicitly excluded from the claimed invention, example 2 does not disclose the composition of an article according to the instant invention.

In this context we emphasize that we do not agree with the examiners estimation that the cited documents U.S. 5,387,415, U.S. 5,384,129 U.S. 5,401,502 and U.S. 5,405,616, which all refer to the cross-linking properties of collagen, are not persuasive due to collagen amounts exceeding 50 % w/w. Actually, the cited documents substantiate that collagen is well known to exhibit cross-linking activity and thus per se acts as a skeleton-forming agent. Accordingly, the cited documents together with Hawley's Condensed Chemical Dictionary, which was cited by the examiner, clearly substantiate that soluble collagen according to example 2 of Zecchino belongs to the group of protein-based skeleton-forming agents, which are excluded from the present invention regardless of their concrete amount or any heat treatment process. As example 2 comprises protein-based skeleton-forming agents in the form of collagen it must be different from the shaped articles according to the present invention regardless of its concrete amount or possible cross-linking capacity. And thus it would not be sufficient to merely vary the volumetric and geometric dimensions, e.g. in view of the sparse teachings of Kojima, to result in the present invention.

This reasoning is further supported by the above discussion of the clear differences in the dissolution behavior between the articles of the present invention and the membranes according to Zecchino. Additionally, Applicants maintain their further arguments hereto presented in Amendment "J," filed 29 April 2010.

In fact, to provide an improved shaped article as it is subject of the present invention, comprising such a specific combination of selected technical features, for the new claimed use according to claim 42, a person skilled in the art would have to carry out far more than routine variation and thus the present invention can not be considered as being prima facie obvious from Zecchino, neither alone nor in view of Kojima.

Conclusion

In light of the foregoing, it is respectfully submitted that the present application, including claims 42-55, is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge the same to Deposit Account No. 18-0160, Order No. GIL-16027.

Respectfully submitted,

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